

CONTEXTUAL SYNONYMY

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A Thesis  
Presented to  
the Faculty of the Department of Philosophy  
University of Houston

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

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by  
John M. Baird  
August 1976

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## ABSTRACT

This thesis is an attempt to define some key pragmatic concepts and to show how they can be used in the solution of a number of recurrent problems in the philosophy of language.

Chapter one examines two traditional approaches to the study of languages and reveals their apriori character. The eclectic view which evolves in the course of this examination provides the theoretical background for the investigation of contextual synonymy.

In Chapter two, preliminary definitions needed for the analysis of contexts are constructed. These definitions are then combined to define the notion of a significant consequence of a sentence, and ultimately the notion of synonymy relative to a context.

Chapter three undertakes the application of the concept of contextual synonymy to some contemporary issues. Translation and the analysis of sentences of propositional attitude receive the primary emphasis, and suggestions are made concerning the semantic treatment of modal notions and practical applications in machine translation.

Chapter four includes a review of a number of currently unsolved problems, and concludes with a critical evaluation of the place of "theories of meaning" in the philosophy of language.

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## Chapter 1

### LANGUAGE AND THEORY

#### INTRODUCTION

Philosophy is by far the most explicitly verbal of the sciences. Language is the primary mode in which the philosopher expresses his ideas and verbal discussion is the laboratory, so to speak, in which those ideas are tested. But there is an important disanalogy between the situations of the scientist and the philosopher, in that the basic principles governing the operation of the scientist's equipment are comparatively well-understood whereas the basic principles governing the operation of language are not. The engineering student who knows how to use an oscilloscope without knowing how it works can make mistake after mistake without realizing that the fault lies with the machine. There is no telling how many philosophical blunders are committed and bequeathed to subsequent generations for much the same reason.

Thus it is perhaps not surprising that philosophers in the twentieth century have become increasingly inclined to turn from the contemplation of esoteric metaphysical questions to a critical evaluation of the extent to which the use, or misuse, of language contributes to the

generation and solution of philosophical puzzles. This project has itself proved quite formidable, and has produced a bewildering variety of alternative theories. Although some progress has been made, there is still very little in the way of general agreement on some of the most fundamental issues.<sup>1</sup>

Rather, writers on the philosophy of language are divided (very roughly) into a number of warring camps. There are Wittgensteinians, Austinians, Carnapians, Russelians, Fregeans, Quinians and Skinnerians, to name a few, and dissention within each group is common. It would be worthwhile to consider just what is expected of an adequate theory of language, in order to understand this lack of consensus.

Most generally, the problem is to account for the fluent speaker's ability to readily produce and understand meaningful utterances of his language, including wholly novel ones, in terms of some general principles which govern their structure and meaning. As one would expect, such a loose formulation of the general problem hardly isolates a single plan of attack, but only raises further questions which must be answered before theorizing can even begin. Moreover, we can distinguish between studies of the grammar and lexicology of individual languages, attempts to develop general

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<sup>1</sup>Cf. Katz, Jerrold, and Fodor, Jerry, "What's Wrong With the Philosophy of Language?", Inquiry, Vol. 5 (1962), especially Sections III and IV. We are indebted to Katz and Fodor for many of the observations in this chapter.

principles appropriate to the study of all languages, and even more general investigations in semiotics. As well as offering an engaging challenge, the extreme complexity of the problem invites disagreement and philosophers have responded in character. While there certainly is an intimate connection between "theories of language" developed on each level of generality, the philosophy of language is much too underdeveloped to permit their incorporation into a single comprehensive theory. Thus at the present time a unified theory of language, or theory of linguistic communication, is nothing more than a worthy ideal. The current disputes within the philosophy of language might be regarded as a dialectical stage in the development of such a theory.

Of central importance in contemporary theories is the concept of linguistic meaning. This concept has been defined in wildly incompatible terms, ranging from extension to abstract entities.<sup>2</sup> Still, it is not entirely obvious that an adequate theory must explicitly define meaning at all; it may be enough that a theory include rules which operate on expressions and generate, for each meaningful expression *x* of a language, a specification of its meaning of the form "*x* means *y*". In any case, any adequate theory will have to provide a systematic procedure for specifying

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<sup>2</sup> Cf. Mill, J. S., A System of Logic (London, 1906), Bk. I; and Church, Alonzo, "The Need for Abstract Entities in Semantic Analysis," Proceedings of the American Academy of Arts and Sciences, Vol. 80 (1951), pp. 100-112.

meanings whether or not it includes a definition of "meaning".

Subsequent chapters are devoted to a critical evaluation of the precision with which the meanings of expressions in a language may be specified, and to the construction of a systematic procedure for producing such specifications on demand. It will be argued that absolute precision is unattainable, that meanings are essentially amorphous, unless the language incorporates explicit postulates that determine which words and expressions are synonymous. Thus specifications of meaning within languages which do not incorporate such postulates, including natural languages, can only be approximate at best. The analysis of such languages requires some technique for isolating expressions which, although not demonstrable synonymous with some given word or expression, are servicable specifications of its meaning relative to the concerns of some predetermined context.<sup>3</sup> If the proposed technique is adequate, if we can in fact devise a formal, systematic framework which preserves the inherent vagueness of natural languages, then hopefully it represents a significant step toward the solution of the general problem--the construction of a

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<sup>3</sup>Some work has already been done in this area. Cf. Zadeh, L. A., "Fuzzy Sets," Information and Control, Vol. 8 (1965), pp. 338-353; Goguen, Joseph A., Jr., "Categories of Fuzzy Sets," (doctoral dissertation), (Ann Arbor, 1969); Machina, Kenton F., "Vague Predicates," American Philosophical Quarterly, Vol. 9 (1972), pp. 225-233; Aune, Bruce, "On an Analytic-Synthetic Distinction," American Philosophical Quarterly, Vol. 9 (1972), pp. 235-242.



comprehensive theory of linguistic communication--and will provide a firm foundation for further research.

#### HISTORICAL BACKGROUND - POSITIVISM AND ORDINARY LANGUAGE PHILOSOPHY

Despite the welter of conflicting doctrines it is possible to isolate two dominant themes.<sup>4</sup> Either it is supposed that natural languages are structurally similar in certain crucial respects to formal languages of one sort or another, or it is supposed that the vagaries of natural languages are most profitable explored through detailed analyses of the use of individual expressions on particular occasions. The former approach is the legacy of logical positivism while the latter is the legacy of ordinary language philosophy. As often happens, each side's most damaging criticism of the other are substantially correct. Neither positivism nor ordinary language philosophy provides the equipment needed to construct a genuine theory of language based on the available evidence.<sup>5</sup>

Of primary concern to the positivist is the fluent speaker's ability to readily construct and understand meaningful, grammatically correct sentences. This ability presupposes not only knowing the vocabulary, but also

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<sup>4</sup>The comments in this section run the risk of considerably oversimplifying both positivism and ordinary language philosophy, and are directed at no particular philosopher. Nevertheless, the deficiencies inherent in both viewpoints deserve careful consideration.

<sup>5</sup>Cf. Katz, Jerrold, and Fodor, Jerry, op. cit.

grasping (at least implicitly) the syntactic and semantic structure of the language. It is evident that this structure must be characterized recursively since the number of correct sentences which can be constructed on the basis of a finite vocabulary is potentially infinite. Thus the positivist attempts an explicit, recursive, theoretical reconstruction of those organizing principles which the fluent speaker understands implicitly.

Now recursive rules are relatively well-understood from studies of formal languages. Formal languages hence provide a ready-made tool for modelling the recursive features of the organizing principles of a natural language. However, as the ordinary language philosopher is quick to point out, the choice of a formal language upon which a theory is to be based cannot simply be arbitrary. Formal languages may be constructed in any number of different ways and can possess any desired properties. The resulting theory will be adequate, indeed, it will be a theory of the natural language in question, only to the extent that the structure of the formal language reflects that of the natural language.

Unfortunately positivists have been insensitive to this condition, but rather have chosen their models on the basis of familiarity. As a result, wholly inappropriate structural features of the models have been incorporated into their theories. One example is particularly relevant. Although formal languages can be constructed in any number

of ways, in fact most models for natural languages have been based on the logistic system of Principia Mathematica, or something similar, whose formation rules are considerably simpler than the grammar of even the most primitive natural languages. The set of rules which characterizes well-formedness in such systems constitutes a context-free constituent structure grammar. Consequently, theories based on such systems cannot begin to cope with the complexities of natural languages, in which the rules that characterize sentencehood must at least constitute a context-restricted constituent structure grammar.<sup>6</sup>

These observations call only for closer consideration of the structure of the natural language in choosing an appropriate model. The positivist's deeply-seated inclination to model the grammar and lexicology of natural languages on the structure of antecedently known formal languages would not be intolerable if the problem were this easy to solve, but it is not. Presumably, the function of formal models in the study of natural languages is similar to that of frictionless surfaces and ideal gases in the natural sciences: idealizations reduce the complexity of the phenomena under study and permit their description in terms of simpler laws. However, idealizations in the natural sciences are subject to strict empirical controls. The scientist is required to

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<sup>6</sup>Cf. Chomsky, Noam, "On the Notion 'Rule of Grammar,'" Proceedings of Symposia in Applied Mathematics, Vol. 12, American Mathematical Society, 1961, p. 9.

indirectly demonstrate an isomorphic relation between the idealization and the phenomena by showing that predictions based on the former fall within a calculable margin of error, and that this margin of error decreases as actual conditions approach the ideal.

The ordinary language philosopher maintains against the positivist, and rightly so, that nothing corresponds to such empirical controls in the case of a formal language regarded as an idealization of a natural language. The idealization entails no testable consequences which would serve to confirm that the requisite isomorphism obtains. For example, suppose that two formal languages,  $L_1$  and  $L_2$ , are proposed idealizations of a given natural language  $L$ , and that some sentence  $S$  of  $L$  is taken as analytic in  $L_1$  and synthetic in  $L_2$ . In order to determine which of  $L_1$  and  $L_2$  is the better idealization of  $L$  it would be necessary to determine whether  $S$  is in fact analytic or synthetic in  $L$ .

Unfortunately we have no adequate characterization of analyticity for sentences of natural languages,<sup>7</sup> and thus no empirically justifiable grounds for choosing one of the two idealizations over the other. Idealizations are illuminating in the natural sciences only because enough is known about the essential features of the phenomena to permit the application of empirical controls but the essential features

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<sup>7</sup>Cf. Quine, W. V., "Two Dogmas of Empiricism," From A Logical Point of View (Harvard University Press, 1953), Section 4.

of natural languages are too poorly understood to provide such controls over linguistic theories based on fully articulated formal models. Hence, it is not possible to demonstrate the required isomorphism between the structure of the model and that of the language under study. In short, the positivist is in the unhappy situation of having a good deal of sophisticated theoretical machinery ready at hand, but too little data to justify its application.

For the ordinary language philosophers, the most important feature of natural languages which cannot be reflected in the positivist's formal models is the fact that the meanings of certain philosophically interesting words seem to fluctuate significantly from context to context. According to these philosophers the meaning of a word can be determined only by a detailed analysis of the way in which it is being used. Thus while positivists tend to focus on the study of sentence structures and implication, ordinary language philosophers are primarily concerned with the study of words and word usage in particular interpersonal contexts.

While this approach is commendable in so far as it is sensitive to the "open-texturedness" of meanings,<sup>8</sup> it has been justly criticized for lacking systematic and theoretical orientation. Compiling a complete dictionary for a given language would fall far short of giving an adequate

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<sup>8</sup> Cf. Waismann, F., "Verifiability," Proceedings of the Aristotelian Society, Supp. Vol. XIX.

theoretical reconstruction. In addition one would need at least a complete grammar, and more importantly, a characterization of the semantic significance of various grammatical forms. The fluent speaker does not merely ape the previously observed linguistic behavior of others, but can produce and understand wholly novel sentences. This ability must rely on the operation of recursive rules of some sort which determine the grammatical contribution to the meanings of sentences, and which cannot be explained within the (necessarily finite) lexicon of the language.

Typically, ordinary language philosophers attempt to account for the semantic significance of grammatical forms by appeals to rules of language: two words are said to have the same use only if their employment is governed by the same rules.<sup>9</sup> Unfortunately, no one has ever adequately defined what a rule of language is, although many analogies have been suggested for what a rule of language is like (a rule of language is like a recipe, a rule of logic, a rule of a game and so on). Presumably, the explicit formulation of the rules which operate implicitly in a given language will have to be accomplished by a thorough investigation of the various ways in which the meanings of words determine the meanings of sentences. However, the ordinary language philosopher is in the position of having to know the rules first in order to

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<sup>9</sup>Cf. The essays collected in Chappell, V. C., ed., Ordinary Language (Englewood Cliffs, N. J., 1964).

determine the conditions under which given words have the same use (meaning), different uses (meanings), more than one use (meaning) and so on.

This observation would be no objection at all if the "use theory" provided some theoretical constructs in terms of which word and sentence meaning could be characterized without employing the notion of a rule of language. One could then examine various systematizations of the rules developed relative to a number of alternative characterizations, and thus arrive at the best systematic description of the language's semantic structure. However, because meaning is identified with use, and because use is at least partially determined by the rules, there is no way to divorce the notion of meaning from that of a rule of language within the "use theory."

Lacking the constructs necessary for a theoretical characterization of meaning, the ordinary language philosopher is forced to resort to his intuitions. That is, while he may succeed in developing a theory of sorts, the theory will be applicable to particular puzzles only when guided by the intuitions of the theorist. This is not to suggest that intuitions play no role in the construction of theories; on the contrary, the judicious exercise of intuition serves to isolate the class of clear, unproblematic cases which provide empirical constraints. Nevertheless, intuitions cannot do the job required of well-defined theoretical constructs in a fully articulated system. The appeal to intuition is

question-begging in the problematic cases, since these are precisely the cases to be settled on theoretical, not intuitive grounds.

The primary objection against the two approaches to the philosophy of language briefly considered here is that both are inescapably aprioristic. The positivist has no empirical justification for his choice of a formal model while the ordinary language philosopher lacks the theoretical constructs needed for a systematic reconstruction of the recursive features of sentence formation. Any theory is required to account for the available evidence, which in this case is the observable linguistic behavior of fluent speakers, and positivists and ordinary language philosophers have succeeded to a certain extent. Nevertheless, when questions arise concerning the adequacy of specific analyses of problematic cases, the appeal to a formal model or to intuition, defended on apriori grounds, prevents an objective evaluation of the degree to which the available evidence supports the analysis.

#### NEW PERSPECTIVES

The apriori character of positivism and ordinary language philosophy is largely responsible for the lack of consensus in contemporary philosophy of language. This suggests that what is needed is a scientific investigation of existing natural languages based on acceptable empirical methods. Moreover, to the extent that its methods are



acceptable, current linguistics represents a legitimate effort in this direction. The philosophy of language may then be seen in the proper perspective as the critical analysis of the concepts and methodology of linguistics; that is, as a discipline strictly analogous to the philosophy of mathematics, the philosophy of science and so on.

Part of the linguist's task is to formulate a grammar, or formal system which determines the set of sentences of a language together with a structural description of each. Most importantly, generative (as opposed to taxonomic) grammars are genuine theories of sentencehood and are open to empirical verification.<sup>10</sup> The system will entail that a given string of elements in the vocabulary is or is not a grammatically correct sentence, and this prediction can be experimentally checked. Note that the intuitions of fluent speakers serve to determine a class of sentences which are unquestionably correct.

This theoretical orientation has encouraged the construction of highly sophisticated systems. The inadequacy of immediate constituent structure grammars motivated the development of transformational grammars, which are capable of giving structural descriptions of a much larger class of

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<sup>10</sup>Cf. Chomsky, Noam, "Remarks on Nomalization," Readings in English Transformational Grammar, Roderick A. Jacobs and Peter S. Rosenbaum, eds., Ginn and Company (1970).

sentences.<sup>11</sup> While no one has ever constructed a complete grammar for English, for example, there is every reason to suppose that further articulation of the theory of transformational grammars will provide the means for fully characterizing the grammatical contribution to the meanings of English sentences.<sup>12</sup>

A syntactic theory, which identifies the set of meaningful sentences, does not completely account for the fluent speaker's mastery of his language. In addition a semantic theory which describes the connection between word meaning and sentence meaning is required. This point has been recognized by many linguists but work on the semantics of natural languages has barely begun.<sup>13</sup> There is, moreover, a good reason why this should be so. As remarked above, the intuitions of fluent speakers concerning the grammatical correctness of given sentences provides more or less reliable empirical control over the construction of syntactic theories. However, nothing corresponds to such empirical control in the case of semantic theories.

Perhaps the clearest of our intuitions concerning meaning are those of synonymy, and it might be suggested that

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<sup>11</sup>For a bibliography of early work in the development of transformational grammars, see Chomsky, Noam, "On the Notion 'Rule of Grammar,'" op. cit., p. 16, footnote 24.

<sup>12</sup>Cf. Chomsky, Noam, "Remarks on Nominalization," op. cit.

<sup>13</sup>Cf. Chomsky, Noam, "Topics in the Theory of Generative Grammar," Current Trends in Linguistics, Thomas A. Sebeok, ed., Vol. 3 (1966).

a proposed semantic theory be evaluated by examining the pairs of expressions which, according to the theory, are synonymous. However, intuitions of synonymy can provide genuine empirical controls over the construction of a semantic theory only if a class of unquestionable cases can be isolated. Nelson Goodman has presented an ingenious argument that there are no unquestionable cases.<sup>14</sup>

Goodman points out that any semantic theory will have to describe the ways in which the meanings of complex expressions depend upon the meanings of their constituents.<sup>15</sup> Consider any two non-identical predicates "A" and "B", the complex predicates "description of an A" and "description of a B," and the actual ink-marks which make up an inscription of the form "an A which is not a B."<sup>16</sup> Now this inscription will be part of the extension of "description of an A" but not part of the extension of "description of a B," hence the two complex predicates cannot have precisely the same meaning. Since the transformational derivation of the complex predicates from "A" and "B" will be identical, any semantic theory will presumably have to account for the difference in meaning between the complex predicates on the

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<sup>14</sup>Goodman, Nelson, "On Likeness of Meaning," reprinted in Problems and Projects (New York, 1972), pp. 221-230.

<sup>15</sup>Ibid., p. 227.

<sup>16</sup>Note that since "A" and "B" are non-identical, "an A which is not a B" cannot be shown to be contradictory without presupposing that "A" and "B" are synonymous.

basis of a difference in meaning between "A" and "B". It follows that no two non-identical predicates are exactly, or absolutely synonymous.

If Goodman is right, then intuitions of absolute synonymy cannot provide empirical controls over the construction of a semantic theory. This is perhaps not an entirely unwanted consequence, since upon reflection it is most difficult to produce even a single pair of non-identical expressions which would be counted synonymous by a fluent speaker on all occasions. Still, the meaning of "bachelor" is surely more like that of "unmarried male" than that of "husband," and this fact should be taken as a piece of relevant evidence. In other words, intuitions of likeness of meaning, rather than of sameness of meaning, might provide the needed empirical controls provided that adequate theoretical definitions of the relevant concepts can be devised.<sup>17</sup> It remains to be shown how this can be done. The feasibility of applying the resulting pragmatic concepts to the investigation of natural languages will then be examined in sections seven and eight.

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<sup>17</sup>It should be explicitly noted that Goodman himself suggests this approach. See Goodman, op. cit., p. 229.

## Chapter 2

### CONTEXTUAL SYNONYMY

#### GENERAL CONSIDERATIONS

Since a theory of the semantics of a natural language must describe the ways in which meanings of sentences depend upon the meanings of the constituent words and expressions, one might hope to discover a criterion of synonymy by examining the semantic role of various expressions in sentences in which they occur. Minimally, if one of a pair of synonymous expressions occurs in a sentence then replacing that expression by its synonym should not affect the truth value of the sentence. Hence it has been suggested that if two expressions are interchangeable everywhere salva veritate then they are synonymous.<sup>1</sup>

As reasonable as this proposal might seem, it is open to a number of objections. For example:

(1) "Bachelor" has eight letters,  
is true, but,

(2) "Unmarried male" has eight letters,  
is false. This example can be ruled out on the grounds that

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<sup>1</sup>Cf. Mates, Benson, "Synonymity," Leonard Linsky, ed., Semantics and the Philosophy of Language (Urbana, Ill., 1952).

the quoted expressions are functioning as names for the expressions within the quotes, provided that interchangeability within names is excluded from the criterion.

Similar emendations of this sort are required to handle other extraordinary constructions. However, it is doubtful whether any two non-identical expressions are everywhere interchangeable salva veritate. Suppose the following is true:

- (3) Jones is in doubt whether a bachelor is an unmarried male.

Here, substituting "bachelor" for "unmarried male" will surely alter the truth value of the sentence. In fact, Nelson Goodman's argument in "On Likeness of Meaning," briefly discussed in section three, proceeds by presenting an algorithm which produces, for any two non-identical expressions, a sentence in which interchangeability breaks down.<sup>2</sup>

Moreover, even if Goodman's objections could be countered in some way, showing that two expressions are interchangeable everywhere salva veritate would not thereby show that the two are synonymous. Suppose that a certain young woman who desires to be married is conversing with a friend, and her friend mentions that he has a brother named Joe. Now it is not at all clear that:

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<sup>2</sup>Goodman, Nelson, "On Likeness of Meaning," reprinted in Problems and Projects (New York, 1972), p. 256.

(4) Joe is a bachelor.

(5) Joe is an unmarried male.

have precisely the same meaning. The young woman in question might plausibly conclude from (4), but not from (5), that Joe is old enough to be married. Indeed, if she knows that her friend is aware of her desire to be married, she might even construe an utterance of (5) as suggesting (in the manner of conversational implicature<sup>3</sup>) that Joe is not old enough.

One might reply that we are here dealing with connotations, not meanings, and that a pair of expressions which have the same meaning are synonymous whether or not there are differences of connotation. This response can be maintained only by showing some clear-cut distinction between meaning and connotation, but lacking a semantic theory, we have no rules or criteria on which to base such a distinction. That is, it cannot be usefully argued that while "Joe is a bachelor" may suggest, it does not imply that Joe is old enough to be married. Demonstrating this assertion would require at least a minimal logic of sentence meaning without which we are free to decide the matter either way. We could of course simply draw the line arbitrarily on a case by case basis, but this approach would shed no more light on the problem than appealing to the dictionary for an explanation of synonymy. The point here is just that a division between

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<sup>3</sup>Cf. Grice, H. P., "Logic and Conversation," The Logic of Grammar, Donald Davidson and Gilbert Harmon, eds., (Encino, California, 1975) pp. 64-74.

important differences in meaning and unimportant differences, viz. connotations, should be the result of a critical analysis rather than a starting point.

Nevertheless, recognizing that typically there are differences of meaning which are significant and differences which are insignificant points the way to a crucial question: is the borderline between significance and insignificance the same on all occasions? Plainly, the answer is no; significance is relative to context, or the purposes of immediate discourse. In most everyday conversations one can probably use "ghost" and "spirit" interchangeably without radically affecting what is said, but in a technical discussion of Hegel's Phenomenology the two cannot be conflated. This suggests that the full semantic analysis of a given sentence cannot be completed in isolation but must include an examination of those aspects of the context that influence the way in which the sentence is understood.

A clear explication of "context" could help systematize the distinctive interconnections between a number of sentences regarded as a piece of coherent discourse and provide the means for defining the relation of sameness of significant meaning relative to a given context. This relation will serve to explain intuitions of synonymy by picking out pairs of expressions which have the same significant meaning relative to most contexts encountered in everyday discourse. The attempt to reconstruct contextual influences on meaning in a formal theory preserves the



ordinary language philosopher's concern with the details of the usage of expressions on particular occasions as well as the positivist's concern for systematic orientation. Moreover, since contexts as defined will be experimentally verifiable, at least theoretically,<sup>4</sup> intuitions of contextual synonymy might be capable of providing empirical controls over the development of semantic theory.

### CONTEXT'S

One thing we may say with assurance is that the concept of context has been more often utilized than analyzed. As a starting point, it is clear that contexts, whatever they are, give us clues to the interpretation of otherwise ambiguous sentences. For example, if our discourse concerns the dishes served at a particular dinner, then we might interpret "had" in "Mary had a little lamb" as meaning roughly "consumed" and "lamb" as a mass term meaning "lamb meat." On the other hand, if our discourse concerns the inhabitants of Mary's stable then our interpretation of the sentence in question will be very different. Presumably, the context guides our understanding of an ambiguous sentence by circumscribing in some way the possible interpretations on which the sentence is relevant. In order to formalize this brief exposition, we need definitions of "interpretation" and "relevance."

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<sup>4</sup>The practical limitations are briefly discussed in Chapter III, see pp. 36-37.

We propose to define interpretation on the basis of the objects which a given sentence says something about, and shall adopt the analysis of the relation of aboutness developed by Nelson Goodman.<sup>5</sup> Briefly, Goodman sets out the following:

- (1) An expression will be said to designate whatever it refers, or applies to. Which parts of a sentence are construed as designating will depend upon how the sentence is analyzed, but any normal analysis of sentences into predicates and arguments will be admitted. The only restriction is that an expression which designates a class, "the New England states" for example, will not be taken as designating every, or even any particular member of that class.<sup>6</sup>
- (2) The generalization of a sentence S with respect to an expression E is a formula constructed by putting an appropriate variable for E everywhere in S and prefixing to the result a universal

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<sup>5</sup>Goodman, Nelson, "About," reprinted in Problems and Projects (New York, 1972), pp. 246-272.

<sup>6</sup>Certain modifications will be required here and throughout if we are to countenance nothing but individuals. See Goodman, "About," op. cit., Section 8.

quantifier governing that variable.<sup>7</sup>

- (3) A sentence T will be said to follow differentially from a sentence S with respect to an object k if T contains an expression designating k and follows logically from S, while no generalization of T with respect to any part of that expression also follows logically from S.

With these preliminary concepts in hand, Goodman proposes to define absolute aboutness<sup>8</sup> as follows:

- (4) A sentence S is absolutely about an object k if and only if some sentence T follows from S differentially with respect to k.<sup>9</sup>

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<sup>7</sup>This definition may seem unnecessary but consider Goodman's example:

- (a) Aroostook County grows potatoes.
- (b) Everything that is an X and contains Aroostook County contains a county that grows potatoes.

Since (b) follows logically from (a) the generalization clause is needed to prohibit taking (b) as evidence that (a) is absolutely about everything.

<sup>8</sup>Goodman treats other kinds of aboutness, but absolute aboutness is all we shall need for our purposes.

<sup>9</sup>We follow Goodman in taking the notion of reference, and hence that of absolute aboutness, as context-free in general. However, a treatment of indexical words in which their reference may be fixed in light of certain features of the context is worthy of consideration. While this proposal will not be explored here, it should be pointed out that the further definitions constructed in this chapter do not presuppose a context-free treatment of indexical words. Such a treatment would be presupposed only if it could be shown that contexts can be formed on the basis of the initial relevance of sentences containing indexical words such that (1) the reference of the indexical words is not fixed by the assumption of initial relevance, and (2) the reference of the

According to this definition, the sentence "Crows are black" is absolutely about black things as well as absolutely about crows. While this result conflicts with conclusions drawn by other writers,<sup>10</sup> its advantages in subsequent applications seem to argue for its correctness. The relation is intentionally made independent of shifting psychological emphasis and is wholly extensional.

We may not use Goodman's definition to distinguish between the two interpretations of "Mary had a little lamb" cited earlier. On the first interpretation the sentence is absolutely about the set of things which are pieces of lamb meat, while on the second it is absolutely about the set of things which are lambs. In short, we may distinguish between all and only those interpretations which make an extensional difference by identifying the interpretation of a sentence with the sets of objects the sentence is about:

Definition I - An interpretation of a sentence  $S$  is a set of objects  $I_S$  such that  $k \in I_S$  (that is,  $k$  is a member of  $I_S$ ) if and only if  $S$  is absolutely about  $k$ .

We would like the definition of relevance to be such

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indexical words is not fixed extra-contextually (by ostension, for example). At present it does not seem possible that contexts can be formed in this way, making a context-dependent treatment of indexical words a live option.

<sup>10</sup>Cf. Ryle, G., "About," Analysis, Vol. 1, pp. 10-11. and Putnam, H., "Formalization of the Concept of 'About,'" Philosophy of Science, Vol. 25, pp. 125-130.

that the relevance of a sentence precludes certain interpretations and admits others. That is, we need to set out conditions which must be met in order for a sentence to be relevant on a given interpretation. The easiest way to do this is to assign to every context a universe of relevant discourse  $U_c$ . Intuitively speaking,  $U_c$  will be the set of objects with which discourse within that context is concerned. Having arrived at a definition of membership in  $U_c$ , we may attempt to define relevance in terms of membership in  $U_c$ .

However, the matter is not quite so simple since contexts are unfortunately quite amorphous. Typically, though these are exceptions, we do not settle contextual questions in advance of engaging in discourse. Rather, the clues to interpretation are picked up in the process of understanding how certain key sentences actually are being interpreted. On the other hand, grasping the concerns of the context requires the recognition that certain key sentences are in fact being counted relevant. Moreover, contexts may expand, contract, or shift in any number of ways during a comparatively short piece of discourse. What we are talking about, so to speak, is determined by what we are inclined to count as relevant, while conversely what is relevant is determined by what we are talking about. Consequently, the definitions of relevance and membership in  $U_c$  should permit determination of relevance in terms of objects antecedently included in  $U_c$  and determination of membership in  $U_c$  in terms of sentences antecedently counted relevant.

Of course this interdependence must be only partial if we are to avoid blatantly circular definition. We must admit that certain objects are included in  $U_c$ , and certain sentences are counted relevant, by consensus of those engaged in discourse. It is no part of our task to formulate a set of rules by which such decisions may be made, nor, we are inclined to think, could this be done. It will be enough if we can determine relevance and membership in  $U_c$  given these arbitrary choices.

We may then suppose that a sentence is relevant if it is about some member of  $U_c$ , but this criterion is not quite strong enough. If we desire to determine whether Jones smokes, then surely Jones is a member of  $U_c$ . Still, "Jones has red hair" and "Jones drives a Ford" are both absolutely about Jones, but neither assertion is relevant. This deficiency can be remedied by requiring all members of a sentence's interpretation to be members of  $U_c$ .

However, this alteration makes the criterion too strong. Again, if we desire to determine whether Jones smokes, then "Jones smokes cigarettes" is surely relevant. But our criterion would discount this sentence on the grounds that the set of cigarettes, which the sentence is absolutely about, is not a member of  $U_c$ . That the sentence should be counted relevant is a consequence of the fact that it implies, via existential generalization, "There is something which Jones smokes." We may say that the latter sentence is immediately relevant and that the former is relevant in

virtue of its implication of the latter, yielding:

Definition II - A sentence  $S$  is immediately relevant on an interpretation  $I_S$  to a context with universe of relevant discourse  $U_C$  if and only if (1) by consensus,  $S$  is identified as an immediately relevant sentence on  $I_S$ , or  
 (2)  $k \in I_S$  only if  $k \in U_C$ .<sup>11</sup>

Definition III - A sentence  $S$  is relevant on an interpretation  $I_S$  to a given context if and only if (1)  $S$  is immediately relevant on  $I_S$ , or (2)  $S$  is not a logical contradiction and there is some immediately relevant sentence  $T$  which follows logically from  $S$ .

We may now try stipulating membership in the interpretation of a relevant sentence as a sufficient condition for membership in  $U_C$ . This would include too much, however, since for any object we can easily construct a relevant sentence which includes that object in its interpretation by conjoining a sentence which is absolutely about that object with some immediately relevant sentence. However, we do need to insure that all objects in the interpretations of all

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<sup>11</sup>It should be noted that no sentence follows differentially with respect to anything from logical contradictions and tautologies. Contradictions yield all sentences as consequences while for every consequence a tautology yields, it also yields a generalization of that sentence with respect to any designating expression. Hence, contradictions and tautologies are not absolutely about anything and are not relevant to any context.

immediately relevant sentences will be members of  $U_c$ . This can be done as follows:

Definition IV - An object  $k$  is a member of the universe of relevant discourse  $U_c$  of a given context if and only if (1)  $k$  is included in  $U_c$  by consensus, or (2) there is some sentence  $S$  which is immediately relevant to the context on some interpretation  $I_s$  such that  $k \in I_s$ .

By combining definitions two and four, we may derive the desired result as a theorem:

Theorem I: A sentence  $S$  is immediately relevant on an interpretation  $I_s$  to a context with universe of discourse  $U_c$  if and only if,  $k \in I_s$  only if  $k \in U_c$ .

There is one further item which must be considered before we conclude our analysis of contexts. A number of contemporary philosophers, Donald Davidson for example,<sup>12</sup> have held that agreement on the truth-value of a significant number of sentences is a necessary condition for linguistic communication. Whether or not one finds this claim plausible, it seems clear that agreement on at least some sentences is necessary for the formation of a context. Otherwise, there

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<sup>12</sup>See Davidson, Donald, "On the Very Idea of a Conceptual Scheme," Presidential Address delivered before the Seventieth Annual Eastern Meeting of the American Philosophical Association in Atlanta, December 28, 1973.



could be no meaningful discourse, only endless argument.

Definition V - A background for a given context is a set of sentences  $B_c$  such that all and only sentences which are accepted as true by consensus are members of  $B_c$ .<sup>13</sup>

A background for a given context may include a number of conditionals which permit the deduction of an immediately relevant sentence  $T$  from some sentence which does not satisfy Definition III. Since such sentences are clearly relevant, we may wish to weaken the criterion by, for example, requiring only  $(\{S\} \cup B_c) \Rightarrow T$ .<sup>14</sup> We can avoid the unwanted consequence that all sentences accepted as true are relevant by adding a second clause, say  $\sim(B_c \Rightarrow T)$ . This clause is a bit too strong, however, since it would automatically exclude all members of  $B_c$ . We wish to allow for the possibility that a member of  $B_c$  might be relevant in the sense that it permits the deduction of some immediately relevant sentence which could not be deduced from  $B_c$  if the sentence in question were not a member of  $B_c$ . This result can be obtained by weakening the second clause and requiring only that the intersection of  $B_c$  and the complement of the singleton of which the sentence in question is the sole member not imply  $T$ . We may then replace Definition III by:

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<sup>13</sup>Cf. Stalnaker, Robert C., "Pragmatics," Semantics of Natural Languages, Donald Davidson and Gilbert Harmon, eds., (Dordrecht, Holland, 1972), pp. 387-389.

<sup>14</sup>Here, and in that which follows, we need definitions of a number of logical and set theoretical notions. We shall assume that these notions have been defined in the standard ways.

Definition III' - A sentence  $S$  is relevant on an interpretation  $I_S$  to a given context with background  $B_C$  if and only if (1)  $S$  is immediately relevant on  $I_S$ , or (2)  $S$  is not a logical contradiction and there is some immediately relevant sentence  $T$  such that  $(\{S\} \cup B_C) \Rightarrow T$  and  $\sim [(\overline{\{S\}} \cap B_C) \Rightarrow T]$ .  $T$  will be called a significant consequence of  $S$ .<sup>15</sup>

### CONTEXTUAL SYNONYMY

According to Definition III' of the preceeding section a sentence is relevant to a given context just in case it has at least one significant consequence. In formulating this notion, we have taken the first step toward a logic of meaning and are now in a position to characterize sameness of significant meaning relative to some context. The relevant assertions which a sentence makes about an object are those of its significant consequences which are absolutely about that object. For example, if the context concerns whether Jones smokes, then "Jones smokes cigars" is

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<sup>15</sup>Using "U" for union, "∩" for intersection, "⇒" for implication, and "¬" for complement: see footnote 10. This definition is reminiscent of some of C. S. Peirce's remarks on meaning: cf. Collected Papers, C. Hentshorne, P. Weiss, and A. W. Burks, eds., (Cambridge, 1931-1958); especially volumes V and VIII. In addition, we can explain why the substitution of one of a pair of alleged synonyms for the other often produces "oddity"-- we are no doubt unsure about the significant consequences of a sentence such as "It was a read pedal extremity race;" cf. Dress, J. R., "Synonymy and Oddity," Philosophical Studies, Vol. 23, pp. 269-279.

relevant. The one relevant assertion which the sentence makes about Jones, moreover, is "There is something which Jones smokes."

Our intuition in section five that such sentences differ in meaning only in ways which are irrelevant to the given context may now be spelled out in terms of their significant consequences. It is neither necessary nor possible at this point to define the relationship between a sentence and its significant consequences in terms of meaning. We need only to establish that any evidence for a claim that two sentences differ in meaning in some way which is important for the purposes of immediate discourse must be found among their implications for the concerns of that discourse.

- (1) For any two sentences S and T and some given context, S and T have the same significant meaning (or are synonymous) relative to that context only if for every significant consequence of S there is an identical significant consequence of T, and for every significant consequence of T there is an identical significant consequence of S.

Now on any reasonable account of meaning, if two sentences have different logical implications then they cannot be synonymous. Since sentences (together with the background) do imply their significant consequences, we might

say:

- (2) For any two sentences S and T and some given context, if S and T have the same significant meaning ( or are synonymous) relative to that context, then for every significant consequence of S there is an identical significant consequence of T and for every significant consequence of T there is an identical significant consequence of S.

These proposals lead, however, to an unwanted consequence. If, in the previous example, Jones' first name is George, then we would want to say that "Jones smokes cigarettes" and "George smokes cigars" have no significant differences in meaning if "Jones smokes cigarettes" and "Jones smokes cigars" do not. But (2) distinguishes between the former pair on the grounds that existential generalization yields respectively "There is something which Jones smokes" and "There is something which George smokes." If two expressions D and E both designate the same object k, we may wish to say that an occurrence of D in one sentence and of E on a second sentence does not constitute a difference in significant meaning. We can weaken (1) and (2) in an appropriate way, then combine the results to formulate the following definition:

Definition VI - Two sentences S and T are synonymous relative to a given context with

universe of relevant discourse  $U_c$  if and only if for every object  $k \in U_c$  and every significant consequence  $P$  of  $S$  which is absolutely about  $k$  there is a significant consequence of  $T$  which is identical to  $P$  except, at most, for the expression designating  $k$ , and for every object  $k \in U_c$  and every significant consequence  $Q$  of  $T$  which is absolutely about  $k$  there is a significant consequence of  $S$  which is identical to  $Q$  except, at most, for the expression designating  $k$ .<sup>16</sup>

Having defined contextual synonymy of sentences, we can easily define contextual synonymy of expressions:

Definition VII - Two expressions  $D$  and  $E$  are synonymous relative to a given context if and only if every pair of sentences  $S$  and  $T$ , which are identical except that  $S$  contains  $D$  where  $T$  contains  $E$ , are synonymous relative to that context.

With respect to highly restricted contexts, Definitions VI and VII produce contextually synonymous pairs of sentences and expressions which are quite unlike in intuitive meaning. However, the pairs which would be synonymous relative to a large number of familiar contexts

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<sup>16</sup> Compare this definition with that suggested by Bruce Aune in "On an Analytic-Synthetic Distinction," American Philosophical Quarterly, Vol. 9, pp. 235.242.

are just those pairs we would be inclined to say have the same meaning on intuitive grounds. We think this fully captures what is intended by a claim that two sentences or expressions have the same meaning; we are not wrong when we say that "bachelor" (on one of its interpretations) and "unmarried male" are synonymous, for they will surely be synonymous relative to any ordinary context.

The view we are urging here is opposed to that which asserts that the meanings of expressions are in some way determined extra-contextually, and that certain features of particular contexts serve merely to eliminate ambiguity. While it is of course true that understanding the meanings of expressions is essential for comprehending a piece of discourse, it does not follow that meanings are learned extra-contextually. On the contrary, learning the meaning of a new word is commonly a matter of learning, by example and analogy, the contextual usage of sentences in which the expression can occur - particularly if the expression in question is non-observational and cannot be learned by ostension.<sup>17</sup> Hence our understanding of the meaning of such an expression cannot be divorced from our grasp of the significant consequences of sentences in which the expression commonly occurs (see section 10), and it is not surprising that relative to familiar contexts the set of an expression's

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<sup>17</sup>Cf. Quine, W. V., Word and Object, (Cambridge, 1960), Chapter I, especially sections 3 and 4.

contextual synonyms and the set of its intuitive synonyms tend to coincide.

Still, we must conclude with Goodman that no two non-identical expressions are absolutely synonymous if absolute synonymy is construed as synonymy relative to any context whatsoever. Given any two expressions D and E, clause (1) of Definition IV allows the construction of a context in which X's are members of the universe of relevant discourse, and in which "anything that is a D is an X" but not "anything that is an E is an X" is a sentence in the background. Then since "Jones is a D" and "Jones is an E" will not be synonymous relative to this context, neither will D and E.<sup>18</sup>

This may seem a bit underhanded, and we can sympathize with those who suspect that some sort of restriction must be placed on the sentences we may include in the background for a context.<sup>19</sup> The background for an actual context, at any rate, will consist of sentences we really believe to be true. Nevertheless, even the firmest of our beliefs are not sacred, and cannot therefore serve as the grounds for a declaration of absolute synonymy. We have here one more demonstration of the interdependence between the meanings of our sentences and our beliefs about the world.

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<sup>18</sup>This argument parallels Goodman's in "On Likeness of Meaning," op. cit.

<sup>19</sup>Cf. Goodman, Nelson, "On Some Differences About Meaning," reprinted in Problems and Projects (New York, 1972), pp. 237-238.

## Chapter 3

### APPLICATIONS

#### TRANSLATION

The set of contextual synonyms for a given expression in a sense<sup>1</sup> gives the meaning of that expression insofar as it is relevant to the context. The connection between the meaning of an expression and the set of its contextual synonyms does not provide an adequate definition of meaning, but it does provide an adequate definition of meaning specification: a specification of the meaning of an expression X relative to a given context is a non-identical expression Y such that X and Y are contextually synonymous. Since the need for meaning specification arises in connection with many semantic puzzles, one would expect that the application of the concept of contextual synonymy could provide a measure of insight into their solution.

One area in which meaning specification is of central importance is translation. Ideally, a translation specifies the meaning of the expression translated, albeit in a different language. Since translation requires a syntactic and semantic analysis of the object text, actual translations

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<sup>1</sup>The import of this qualification will become evident in Chapter 4.



provide a wealth of data for linguistic research. Typically, however, practicing experts are much too busy translating to take time out to analyze what they are doing and tend to regard their task from a purely literary point of view, resolving problems that may be encountered in a more or less ad hoc fashion. Until recently, the feasibility of applying the methods and techniques developed in empirical linguistics to doing actual translation had not been fully evaluated.<sup>2</sup>

The situation changed radically when the development of high-speed electronic computers began generating interest in the possibility of machine translation. Acute problems were immediately encountered in attempting to write the programs required to analyze the object texts.<sup>3</sup> Many of these problems have been solved, but some have not. At present, machine translations are next to useless without extensive post-editing, and with post-editing the process is too slow and expensive to compete with human translation.<sup>4</sup>

The problem, in its most general form, is that no procedure for evaluating the acceptability of a translation has been forthcoming other than to submit the translation to

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<sup>2</sup>Oettinger, Anthony G., Automatic Language Translation (Cambridge, 1960), pp. 110-114.

<sup>3</sup>Booth, A. Donald, and Locke, William N., eds., Machine Translation of Languages (Cambridge, 1955), p. 2.

<sup>4</sup>Language and Machines, a report by the Automatic Language Processing Advisory Committee, Division of Behavioral Sciences, National Academy of Sciences, National Research Council (Washington, D. C., 1976), p. 24.

a human post-editor. If such a procedure could be devised, translating machines could be programmed to evaluate their own output and make appropriate corrections where necessary, eliminating much of the need for post-editing. In addition, a criterion of acceptability would represent a significant contribution toward understanding how the meanings of expressions in different languages are related.

First, it should be pointed out that a complete translation algorithm for two languages will have to be bi-polar; that is, it must consist of two functions each of which maps the sentences of one of the languages into the sentences of the other.<sup>5</sup> An artificial example will serve to illustrate this point. Consider two languages,  $L_1$  and  $L_2$ , for the propositional calculus.  $L_1$  contains sentential variables and the operations of negation ( $\sim$ ) and disjunction ( $\vee$ ).  $L_2$  contains sentential variables and the operation of alternative denial ( $/$ ). All  $L_1$  formulas can be translated into  $L_2$  formulas by defining a function  $f$  which maps the sentential variables of  $L_1$  into those of  $L_2$  and extending the mapping according to the following rules:

$$f(\sim X) = f(X)/f(X) \quad ;$$

$$f(X \vee Y) = f(X)/f(X)/f(Y)/f(Y)$$

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<sup>5</sup>Tymoczko, Thomas, "A Note on Translation," The Journal of Philosophy, Vol. LXXII, pp. 16-21. I am indebted to this paper both for the observation that translation is bi-polar as well as for the example.

Now the inverse of  $f$  obviously does not provide a translation from  $L_2$  to  $L_1$ , for there will be an infinite number of formulas in  $L_2$  (for example, all those in which a variable occurs an odd number of times) which are the translation of no formula in  $L_1$ . A second function  $g$  is required, which maps the sentential variables of  $L_2$  into those of  $L_1$  and extends the mapping as follows:

$$g(X/Y) = \sim g(X) \vee \sim g(Y)$$

Again, there will be an infinite number of formulas in  $L_1$  which are the translation of no formula in  $L_2$ . Clearly, an  $L_1$  formula  $X$  need not be identical to its retranslation  $f(g(X))$ .

For example:

$$\begin{aligned} p \vee q & \xrightarrow{f} p/p/q/q \\ p/p/q/q & \xrightarrow{g} \sim(\sim p \vee \sim p) \vee \sim(\sim q \vee \sim q) \end{aligned}$$

In general, a function and its inverse will not serve to inter-translate two languages for the propositional calculus unless the languages' definitions of formula, and hence the structure of the formulas, are isomorphic. The observation that translation must be bi-polar can be extended to the case of natural languages, for the sentence structure of two natural languages will normally be quite different. We will need, say, a German-English translation based on the structure of German sentences and a corresponding English-German translation based on the structure of English sentences.

Since this is the case, why is it that the functions  $f$  and  $g$  constitute an acceptable translation? The answer, quite obviously, is that any formula and its image under either  $f$  or  $g$  will be truth-table equivalent. While nothing strictly corresponds to truth-table analysis in the case of natural languages, the following proposal is nonetheless suggested:

- (1) An expression  $D$  in one natural language  
is an acceptable translation of an  
expression  $E$  in a second natural language  
just in case  $D$  and  $E$  have the same  
meaning.

This proposal can hardly be expected to do. If no two non-identical expressions in the same language ever have precisely the same meaning, (1) implies that there can be one and only one correct translation for a given expression. However, the English sentence "He ordered the students" could plausibly be translated into German either as "Er ordnete die Studenten" or as "Er befahl die Studenten" depending on the context in which the original appears. In other words, the acceptability of a translation depends to a certain extent on the original expression's contextual environment, a fact evinced by the extreme difficulty of translating poetry. Nevertheless, we cannot simply replace "have the same meaning" in (1) by "are contextually synonymous," for contextual synonymy has been defined only for expressions of the same language.

Returning to our artificial example, it is possible to demonstrate that  $f$  and  $g$  constitute an acceptable translation without having to resort to truth-tables. Since a formula and its image under  $f$  and a formula and its image under  $g$  will be equivalent, a formula and its image under either of the composite functions  $f \circ g$  or  $g \circ f$  will also be equivalent. That is, it is possible to show that for every formula  $X$  of  $L_1$  and every formula  $Y$  of  $L_2$ ,  $X \equiv f(g(X))$  and  $Y \equiv g(f(Y))$ .

Natural language translations may be tested in a similar way although the procedure will be somewhat more complicated since the functions will normally be many-to-many rather than one-to-one. Since an expression and its re-translations will be expressions of the same language it will be possible to determine whether or not they are contextually synonymous. For example, which of "Er ordnete die Studenten" and "Er befahl die Studenten" is the better translation of "He ordered the students" can be determined by retranslating the German sentences and comparing the results in context with the original English sentence. In general:

- (2) An expression  $D$  in one natural language is an acceptable translation of an expression  $E$  in a second natural language if and only if at least one translation of  $D$  is synonymous with  $E$  relative to the context in which  $E$  occurs.

Moreover, since there is no independent test of the

adequacy of translations of natural languages corresponding to truth-table analysis, acceptability according to (2) is the most that can be required.

Theoretically, a translating machine could be programmed to check its own output automatically instead of referring alternative translations to a post-editor. Even so, the practical problems are quite forbidding. Constructing a machine capable of handling a wide variety of contexts would require storing an extensive background--an enormous amount of information.<sup>6</sup> While processing this much information and determining the significant consequences of a given sentence is not beyond the capabilities of that most sophisticated of computers, the human brain, it is well beyond the capabilities of electronic computers. Hence, while good machine translations may be obtainable by restricting input to certain types of unambiguous contexts, scientific journals for example, barring a quantum jump in computer technology a general-purpose machine translator is probably out of the question in the foreseeable future.<sup>7</sup>

More important philosophically is that if translations which satisfy (2) are acceptable, then a certain

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<sup>6</sup>Once again we encounter the thesis that meaning and belief are interdependent. A machine cannot be programmed to accurately translate arbitrary discourse without supplying it with an extensive list of what is believed to be true.

<sup>7</sup>Language and Machines, op.cit., pp. 17-18.

amount of credibility accrues to W. V. Quine's thesis of the indeterminacy of translation.<sup>8</sup> Quine considers the construction of a "manual" which translates a previously unknown foreign language into one's home language. The translations of highly observational sentences and certain other features of the manual<sup>9</sup> will be dictated by the empirical evidence available. Translating the remainder requires what Quine calls analytical hypotheses which (roughly) specify the foreign language's grammar and lexicology. Since analytical hypotheses exceed anything implicit in the native speaker's verbal behavior Quine argues that alternative sets of analytical hypotheses could be devised, each of which yields translations consistent with the available evidence, but which specify mutually incompatible translations of any number of highly non-observational sentences. Moreover, he argues that none of these can be considered the one "correct" set.

It is this last claim that has generated the most controversy, particularly since no one has produced a really convincing example.<sup>10</sup> If two manuals produce incompatible translations, A and B, of a given foreign sentence X, since the native speakers are not in the dark as to the meaning of

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<sup>8</sup>Quine, W. V., Word and Object (Cambridge, Mass., 1960), Chapter 2.

<sup>9</sup>Ibid., p. 68.

<sup>10</sup>Cf. Words and Objections, D. Davidson and J. Hintikka, eds., (Dordrecht, 1969); especially the paper by Chomsky.

X it would seem that some sort of evidence could be found for preferring A or B. Quine argues to the contrary that both alternatives could be accomodated by "compensatory variations" in analytical hypotheses concerning other locutions.<sup>11</sup> It is not at all clear, however, what such compensatory variations would be like.

Translating the home language into the foreign language will require a second, quite different manual, so specifying the meaning of A and B in the foreign language will require the application of this second manual. Moreover, for two pairs of manuals,  $(M_1, M_2)$  and  $(M_1^*, M_2^*)$  to produce translations which satisfy (2), it is not a necessary condition that  $M_1$  and  $M_1^*$ , or  $M_2$  and  $M_2^*$ , specify similar or even compatible translations of a given sentence. Alternative translations in one direction can be accomodated by appropriate alterations in the manual which translates in the other direction. Consequently, if translations which satisfy (2) are acceptable it should be theoretically possible to construct alternative pairs of manuals which on the whole produce acceptable translations, but which specify incompatible translations of any number of non-observational sentences. What is more, if acceptability according to (2) is all that can be required of translation manuals, then the choice between two pairs of manuals will be wholly arbitrary; as

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<sup>11</sup>Quine, op. cit., p. 72.



Quine puts it, there is no objective matter to be right or wrong about.<sup>12</sup>

### SENTENCES ABOUT ATTITUDES

Particularly difficult translation problems are posed by sentences of the form "He said that . . .," "He believes that . . .," "He hopes that . . ." and so forth, in which so-called verbs of propositional attitude occur. Specifying the meaning of such a sentence, whether in the same or another language, requires determining its significant consequences and hence knowing its logical form. Sentences of propositional attitude have, however, stubbornly resisted logical analysis.<sup>13</sup> For example, it is tempting to construe "believes that" in:

- (1) Jones believes that Vienna is the capitol  
of Austria.

as a dyadic relation between Jones on the one hand and "Vienna is the capitol of Austria" on the other.<sup>14</sup> Unfortunately, if the contained sentence is given its usual logical form, one should be able to substitute the coextensive singular term "Wien" for "Vienna" without change of truth

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<sup>12</sup>Ibid., p. 73.

<sup>13</sup>Cf. The Logic of Grammar, D. Davidson and G. Harmon, eds., (Encino, Ca., 1975), Chapter 2.

<sup>14</sup>Cf. Carnap, R., The Logical Syntax of Language (London, 1937), p. 248.

value. But:

- (2) Jones believes that Wien is the capitol  
of Austria.

may well be false. In other words, given that Vienna = Wien, we wish to countenance the inference from "Vienna is the capitol of Austria" to "Wien is the capitol of Austria" but block the inference from (1) to (2).

The reason, so the story goes, is that while the contained sentences in (1) and (2) are extensionally equivalent they may not, for Jones, be intensionally equivalent. This move necessitates positing intensional objects for the "believes that" relation which are distinct from the sentences by which they are expressed. No theoretical advantage is to be gained by positing such objects, however, if no two non-identical expressions have the same meaning (express the same proposition).<sup>15</sup>

A second approach, of which W. V. Quine has proposed a variation,<sup>16</sup> is to treat the contained sentence as having no logical structure whatsoever. Quine has devised ingenious new primitive forms which exhibit one or more of the crucial

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<sup>15</sup>It might be objected that we have reached this conclusion precisely because we have refused to apply intensional analysis. However, economy of theoretical ontology is as desirable of theories of language as of any other theory, and propositions are not to be wanted if their purposes can be served in other ways.

<sup>16</sup>Quine, op. cit., p. 216; and Quine, W. V., "Quantifiers and Propositional Attitudes," The Logic of Grammar, op. cit., pp. 153-159.

terms in purely referential positions (i.e., substitution of coextensive terms and so forth is permitted) and counts the rest of the contained sentence as an immediate constituent of a composite general term. Thus Quine's rendering of (1) would be:

- (3) Jones believes [Vienna is the capitol  
of Austria].<sup>17</sup>

where "believes [Vienna is the capitol of Austria]" is a term with no accessible internal structure. Now the undesirable inference from (3) to the counterpart of (2), viz.:

- (4) Jones believes [Wien is the capitol of  
Austria]

is effectively blocked because substitution is not permitted within the brackets. However, the inference from (3) to either of:

- (5) Jones believes [Vienna is the capitol city  
of Austria]  
(6) Jones believes [Vienna is the Austrian  
capitol]

is also blocked for the same reason. While Quine would no doubt defend this result on the grounds that any justification of the inference from (1) to "Jones believes that Vienna is the Austrian capitol" would have to turn of the

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<sup>17</sup>This is only one of the alternative renderings suggested by Quine, but the objection that will be raised against this version applies mutatis mutandis to the others.

notion of sameness of meaning, it is nevertheless difficult to imagine a situation in which we would not make the inference with complete confidence.

The source of the difficulties concerning the logical form of sentences of propositional attitude is the fact that contextual influences are quite strong. It is a virtue of Quine's analysis that these influences are taken into account, to a limited extent, by providing that any of the terms in the contained sentence may be exhibited in referential position as the situation demands. Quine does not, however, explain how the situation determines which terms are to be so exhibited.

The idiom of indirect discourse is perhaps the least obscure of the propositional attitude constructions because of its obvious connection with direct quotation. Even so, Jones might assent to:

(7) Jones said that Venus is an inferior planet.

but vociferously deny:

(8) Jones said that the Morning Star is an  
inferior planet.

Thus "said that" in (7) is not straightforwardly analyzable as a relation between Jones and "Venus is an inferior planet."

Nevertheless, we think that Donald Davidson is quite right to argue that talk of intensional objects has obscured the most obvious and natural interpretation: sentences of indirect quotation, like those of direct quotation, are simply reports of prior linguistic activity (we may wish to

include written as well as verbal activity).<sup>18</sup> Such reporting may of course be accurate or inaccurate, but while direct quotation requires a verbatim rendition of the original item we as yet have no fixed standard of how far indirect quotation may deviate from the direct. Intensional objects are not to be wanted for the "said that" relation on this score alone, for the problem is not thereby resolved but simply recast in new (and more obscure) terms.

Our standard must insure that the report does not deviate from the original in any way which matters. The reporter does not aspire to direct quotation, but claims only that his version is "close enough"--that it is synonymous with the original relative to the context in which the report is made. Thus (7) may be rendered:

- (9)  $(\exists x) [ (\text{Jones said "x"}) \ \& \ (x \text{ is synonymous with "Venus is an inferior planet" relative to this context}) ]$ <sup>19</sup>

where "Jones said 'x'" is the familiar device of direct quotation. Substitution of contextually synonymous expressions, and any other transformation which preserves

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<sup>18</sup> Davidson, D., "On Saying That," The Logic of Grammar, op. cit., pp. 143-152.

<sup>19</sup> Given the results of the preceding section we may, if we wish, provide for the possibility that the original was in another language. (9) would then become:  $(\exists x)(\exists y) [ (\text{Jones said "x"}) \ \& \ (y \text{ is an acceptable translation of } x) \ \& \ (y \text{ is synonymous with "Venus is an inferior planet" relative to this context}) ]$ . Since this emendation may be made to any of the formulations in this section, in the interests of brevity we will omit it.

contextual synonymy, is permitted within the second set of quotation marks.

This rendering of (7) leads to a result which may at first seem undesirable. Suppose that relative to the context in question "Venus" is synonymous with "the Morning Star." Then (9) yields:

- (10)  $(\exists x) [ (\text{Jones said "x"}) \ \& \ (x \text{ is synonymous with "The Morning Star is an inferior planet" relative to this context}) ]$ .

So we may report Jones' statement using (8) rather than (7) even though Jones would not concur. We give up the notion that an indirect quotation is accurate only if the original speaker would certify our report, but the loss is to be welcomed. It simply reflects our willingness to paraphrase the speaker's original words in ways which might have been inappropriate in the original context, but which create no confusion for the purposes of the report.

Quite often, we either cannot remember the speaker's exact words or are in no position to ascertain whether he would object to our paraphrase. Hence, while the locution "said that" suggests that a certain psychological attitude toward the following sentence is affirmed of the subject, the suggestion is clearly misleading. The leeway permitted in indirect quotation is, so to speak, for our own benefit, and provided that we are sufficiently clear about the significant consequences of the original version we are free to paraphrase as we see fit.

Suppose, further, that Jones has explicitly denied that the Morning Star is an inferior planet and we report it thusly:

- (11)  $(\neg x)[(\text{Jones said "x"}) \ \& \ (x \text{ is synonymous with "It is not the case that the Morning Star is an inferior planet" relative to this context})]$ .

The conjunction of (10) and (11) certainly looks disturbing; Jones has made two statements which by our lights would lead to an explicit contradiction. What does this say about Jones' rationality? The answer, of course, is that it says nothing. We cannot charge Jones with inconsistency for (10) and (11) do not imply:

- (12)  $(\exists x)[(\text{Jones said "x"}) \ \& \ (x \text{ is synonymous with "The Morning Star is an inferior planet and it is not the case that the Morning Star is an inferior planet" relative to this context})]$ .

The air of paradox disappears when one recalls that the original statements and our reports are made within distinct contexts. Moreover, the oddity of the conjunction of (10) and (11) is just the evidence on which we would be inclined to conclude that the two contexts differ in some significant respect: we know something that Jones does not, or Jones knows something that we do not. The same remark applies to oddity resulting from quantifying into sentences

of indirect quotation from the outside.<sup>20</sup> Paraphrase can lead to confusion, but such is the price paid for the convenience of indirect quotation.

Synonymy with the original version relative to the context in which the report is made is thus the criterion for the accuracy of an indirect quotation, and can be regarded as an explication of Davidson's notion of "samesaying."<sup>21</sup> The attitude of the original speaker, actual or hypothetical, toward the contained sentence is of no consequence; his ignorance need not affect our choice of paraphrase. Thus, at least as far as indirect discourse is concerned, the title of this section is a misnomer.

To the extent that difficulties concerning the logical form of belief-sentences parallel those concerning the logical form of sentences of indirect discourse, one would expect a similar analysis. First, however, we must settle on what it means for a person to believe so-and-so before we can hope to understand what it means to say that he believes so-and-so. For this purpose, we propose to treat belief as a relation between a psychological subject and a sentence.<sup>22</sup> It is true that for the present we can do no better than

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<sup>20</sup>Cf. Quine's Bernard J. Orcutt example; Quine, "Quantifiers and Propositional Attitudes," op. cit., p. 154.

<sup>21</sup>Ibid., p. 150.

<sup>22</sup>Quine has suggested the same treatment; cf. Quine, "Quantifiers and Propositional Attitudes," op. cit., pp. 158-159.



characterize the relation in dispositional terms, "is disposed to assent to," for example, but this observation has no direct bearing on the following analysis of belief-sentences. The relation will be introduced as primitive and the analysis will therefore be neutral between alternative psychological or neuro-physiological definitions of the dispositionals.

If (1) is then construed as affirming a relation between Jones and "Vienna is the capitol of Austria," drawing inferences from (1) to other sentences of the form "Jones believes that. . ." is bound to be a dubious business. For example, even if we have:

(13) Jones believes that Wien and Vienna are  
the same city.

(2) still cannot be deduced from (1) and (13) without an additional, and no doubt false, premise to the effect that the set of Jones' beliefs is deductively closed. Consequently, if a belief-sentence is construed as affirming a relation then we must, in the manner of direct quotation, tolerate no paraphrase. This analogy may be reflected by encasing the sentence in quotation marks, rewriting (1) for example as:

(14) Jones believes (is disposed to assent to),  
"Vienna is the capitol of Austria."

What, then, of those occasions when inference such as that from (1) to (2) seem legitimate? Since we cannot guarantee that the relation affirmed in (14) also holds between Jones and "Wien is the capitol of Austria," even if we know that (13) is true, under no circumstances can such

inferences be countenanced without denying that the relation is necessarily preserved. So (2), if asserted on the basis of (1), must be understood as reporting, in the manner of indirect quotation, the essential content of some other sentence to which Jones is disposed to assent. Just what is essential will depend, of course, on the context in which the report is made. Therefore (2), if asserted on the basis of (1), is rendered:

(15)  $(\exists x)[(\text{Jones believes "x"}) \ \& \ (x \text{ and "Wien is the capitol of Austria" are synonymous relative to this context})]$ .

where "Jones believes 'x'" is the analogue of direct quotation used in (14). Again, transformations which preserve contextual synonymy are permitted within the second set of quotation marks.

Thus belief-reporting, like utterance-reporting, is analyzable into direct and indirect modes. That written English marks the distinction in the latter but not the former case is of no consequence. In both cases the direct mode requires verbatim rendition while the indirect mode allows paraphrase. The extent to which the paraphrase may differ from the original item is governed by the concerns of the context in which the report is made. Moreover, odd results obtained by quantifying into such constructions is not taken as evidence that the analysis is faulty, but rather as evidence that the context of the original and that of the report differ in some crucial respect.

The treatment of indirect quotation and belief-sentences will evidently carry over mutatis mutandis to sentences in which other verbs of propositional attitude occur. Furthermore, it suggests similar treatment of other constructions which fail the substitution test, the existential generalization test, and so forth. For example, we might define a contextually necessary (or analytic) sentence as one which is derivable from a tautology by the substitution of contextually synonymous terms. This would explain the intuitive reasonableness of:

(16) It is necessary (or analytic) that five  
plus four equals nine.

The intuitive unreasonableness of substituting "the number of planets" for "five plus four" in (16) would also be explained, for the two will not in general be contextually synonymous.

## Chapter 4

### REMARKS ON THE SEMANTICS OF NATURAL LANGUAGES

#### TOWARD FURTHER RESEARCH

The preceeding eight sections can claim no more than to have described the skeletal framework of a theory of the semantics of natural languages, but little more could be expected. Discovery of linguistic universals, of what the semantic structure of families of languages or of all languages have in common, on which such a theory would be based must await the elaboration of the semantics of individual languages. Nevertheless, some promising areas of inquiry are indicated.

First, it will not be possible to fully explicate the concept of implication for natural languages in terms of the concept of implication as defined in formal logistic systems. From the discussion of sentences of propositional attitude it is reasonably clear that a full grammatic description of such sentences does not suffice to determine which sentences may justifiably be inferred. Hence implication will apparently have to be defined in terms of semantic as well as grammatical structure. We were able to use logical implication to define significant consequences only because conditionals were

included in the background. In principle, these conditionals should be replaceable by a direct theoretical connection between relevant features of the context and semantic structure.

Second, in order to express semantic relations within a fully articulated theory it will be necessary to define a set of constructs, corresponding to the more familiar grammatical constructs (Noun, Verb, Adjective and so forth), in terms of which the semantic structure of sentences can be described. This has been done to some extent in attempting to program machine translators,<sup>1</sup> although the emphasis has been on practical results rather than theoretical adequacy. The development of this conceptual apparatus, like that of any other theory, should seek to maximize descriptive and explanatory power and minimize conceptual complexity.

Third, while formal logistic systems cannot be regarded as idealizations of natural languages, concepts and techniques developed in the study of formal logics have nonetheless contributed significantly to the analysis of natural language. Hence the treatment of "It is necessary that. . ." indicated in section 8 suggests comparing an evolving semantic theory against formal model logics. Such a comparison could help clarify the semantic structure of such sentences.

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<sup>1</sup>Cf. Oettinger, A., Automatic Language Translation (Cambridge, Mass., 1960), Chapter 6.

Fourth, a given piece of discourse often contains expressions which are used figuratively or metaphorically. The semantic import of metaphorical usage is very poorly understood, again witness the difficulty of translating poetry, and such usage poses perhaps the greatest obstacle to a complete semantic theory. As one might expect, systematic investigation of metaphor has barely begun.<sup>2</sup> Further work in this area, and in subsequent applications to the analysis of natural languages, is sorely needed.

#### THE MEANING OF MEANING

The methodology which derives from the eclectic view of the philosophy of language described in the first three sections places rather severe restrictions on what is admissible in a semantic theory. We have not availed ourselves of the meaning entities, or any of their surrogates, which populate many discussions. However, if the set of an expression's contextual synonyms in a sense gives the meaning of an expression (as remarked in section 7), then it seems reasonable to ask what is being given; that is, what are meanings?

The question obviously makes sense only if meaning is construed as something over and above specifications of meaning, as something which contextually synonymous expressions

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<sup>2</sup>Cf. Goodman, Nelson, Languages of Art (New York, 1968), pp. 71-98.

have in common. One possible answer, yielded by Definitions VI and VII, is to define the meaning of an expression as the set of the significant consequences of the relevant sentences in which it occurs. It might be objected, however, that this proposal simply begs the question since determining the significant consequences of a sentence presupposes knowing its meaning. While it is a bit difficult to ascertain precisely what this anticipated objection comes to, one clear implication is that the meaning of a sentence is something which can be known prior to determining its significant consequences. As a result, a theory of meaning would be required in addition to a semantic theory which characterizes specification of meaning.

• It is precisely this supposition which has led to the wildly divergent theories of meaning glimpsed in section 1. Moreover, it is evident that the supposition is quite misguided from the point of view of good scientific methodology. Having a theory of something or other requires a pre-theoretical characterization of the subject matter, in the way that chemical theory, for example, is based on observational descriptions of the interaction of chemical compounds. It is possible to isolate a class of unquestionable cases of contextual synonymy, and thus provide a pre-theoretical characterization of the subject matter of semantic theory. However, as argued in section 4, it is not possible to isolate a class of unquestionable cases of absolute synonymy, of sameness of meaning, and we therefore cannot characterize

the subject matter of theories of meaning.

Consequently, theories of meaning are not genuine theories of anything at all and there is no reason to suppose that there is anything to knowing the meaning of a sentence beyond knowing its significant consequences. As Noam Chomsky once insightfully observed:

Part of the difficulty with the theory of meaning is that "meaning" tends to be used as a catch-all term to include every aspect of language that we know very little about. Insofar as this is correct, we can expect various aspects of this theory to be claimed by other approaches to language in the course of their development.<sup>3</sup>

We heartily concur.

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<sup>3</sup>Chomsky, N., Syntactic Structures (Gravenhage, 1962), p. 103.



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